FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

1922.

Nov. 30 .... Closing date for FLIGHT Glider Designing Competition
Dec. 1 .... Lecture, "Constructional Design of Aeroplanes," by C. W. Tinson, before I.Ae.E.
Dec. 15–Jan. 2 Paris Aero Exhibition

1923.

Mar. 15 .... Entries close for Dutch Height Indicator Competition
June .... International Air Congress, London
Dec. 1 .... Entries close for French Aero Engine Competition

1924.

Mar. 1 .... French Aero Engine Competition

EDITORIAL COMMENT.

WE are extremely glad to learn that we were misinformed in the matter of the future of Hendon, as stated under the heading "Exit Hendon" in last week's issue of FLIGHT. The source from which our information came was such as to give us no reason for questioning its accuracy, and consequently the paragraph was published. It has now been pointed out to us by the Grahame-White Co., Ltd., proprietors of the London Aerodrome, that so far from contemplating the cutting-up of the ground into building plots, it is intended, at no very distant date, to re-open the London Aerodrome on a scale far larger and more important than has hitherto been possible. Needless to say, we are delighted to hear that this is the case. We have consistently advocated the return to Hendon as the scene of aviation meetings, pointing out that it is, even now, far more easily reached from the centre of London than is Waddon.

Hendon Redivivus

Moreover—and this is a point which is not, perhaps, always recognised—Hendon was before the War the recognised aerodrome for London, and there was something more than a mere name in the appellation "London Aerodrome." In fact, Hendon and flying became synonymous terms. Nor has this fact, we are quite certain, been materially altered, and as soon as an aviation meeting is again announced for Hendon it will be found that visitors will flock to the 'drome in numbers which Waddon can never hope to see.

The extension of the tube to Edgware, with a station in Colindale Avenue, about 100 yards from the main gates of the aerodrome, will place the London Aerodrome within 30 minutes of Piccadilly Circus, with no change anywhere, and no long walk at the end of the journey. What this will mean as an additional inducement to visitors can easily be imagined. It would indeed be difficult to improve, from the point of view of facility of access, upon Hendon, and add to this the association which the London Aerodrome has with flying in the good old days, and it will be realised that when flying, both sporting and commercial, gets really going again, Hendon cannot very well be ignored.

And Increasing Enterprise

By way of showing that the proprietors of the London Aerodrome have no intention of abandoning the site as an aerodrome, it may be mentioned that an additional piece of land—approximately 150 acres—has been acquired, and can be made part of the old aerodrome. This piece of land lies some little distance to the north of Colindale Avenue, between Edgware Road and the old aerodrome, and adjoins the old aerodrome for a considerable distance. In addition to the Midland Railway, which passes the aerodrome, there is a private railway running almost all round the property, right up to the Edgware Road, so that it will be seen that, what with the tube extension, the Midland Railway (with a halt at Hendon) and the private railway, it should be possible to take care of practically speaking any number of visitors. Trains could probably be run out on the Midland Railway and straight on to the aerodrome siding, thus supplementing the tube and 'bus services.

With the well-equipped works, hangars with electric light and power, easy access by rail or road for goods traffic, the aerodrome is also particularly well equipped, and it might be mentioned that a great deal of work has been done on the aerodrome itself in the way of drainage, etc., so that the surface is, or could very quickly be made, smooth enough even for racing machines.

It is, perhaps, open to question whether or not Hendon could and should be made the London Air Port. Against it might be advanced the objection that, for continental traffic, machines would have to make a considerable detour to avoid flying over London, while the distance would be somewhat greater than from Waddon. Nor is it all certain that it would be an unmixed blessing to have the Air Port there. Experience at Waddon appears to indicate that it is not desirable to mix the two sides of flying.

In this case this objection might be overcome by having the "Sports" Aerodrome on the piece of ground adjoining the Edgware Road (where another station, near by, on the tube extension is being built) and keep the "serious" air traffic on the old aerodrome, where already large permanent buildings are in existence. At any rate, when the internal air services grow, as they certainly will, the lines from the north and west would naturally terminate at Hendon. This could be done with a minimum of new organisation, as such passengers who wished to go on to the continent could be flown over to Croydon (assuming that aerodrome to be retained for the continental traffic) in a very short time.

Another development which it is not difficult to imagine would be the establishment at Hendon of a base for airship lines, if and when such come into being. One section of the ground could then be used by the lighter-than-air traffic and the other for aeroplane work. The two would be close enough together for co-operation, but need not be in one another's way in the slightest.

Altogether we are glad to be able to say that we were wrong when, last week, we lamented the demise of Hendon, and personally we tender our apologies to Mr. Claude Grahame-White and the Grahame-White Co., expressing at the same time our satisfaction with and admiration of the policy, under many serious handicaps, which, in spite of tempting offers for purposes which would once and for all spoil the ground for an aerodrome, has been far-sighted enough to visualise the enormous possibilities of making Hendon, both in name and in deed, the London Aerodrome. Good luck to it, and may the revival come soon.

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New Course for Speed Records

At the Rome Conference of the *Fédération Aeronautique Internationale*, which was held from October 8 to October 13, 1922, it was decided to increase the length of the course over which world's records must be flown from 1 kilometre to 3 kilometres. This announcement will be received with satisfaction by all interested in accurate timing of aeroplane speeds, as it has long been evident that over a short distance of only just over half-a-mile it is well nigh impossible to get accurate results. A slight dive towards the first post will increase the speed of a modern fast machine very considerably. In fact it is probable that, where strict observation is not kept, it may be possible for a pilot to gain sufficient momentum in this way to increase the speed of his machine not only over the first part but over the whole of the speed course.

One very unsatisfactory phase of the present speed tests is that they give rise to a great deal of uncertainty, and, knowing how easily a small error may creep in, there has been too much tendency during the last few years for one country rather to doubt the accuracy of the timing of records established in another. It is unnecessary to go into details, the position being well known, and it suffices to express the wish that the new regulations, requiring as they do a distance of roughly $1\frac{3}{4}$ miles, will remove, or at any rate tend to reduce to a minimum, the unsportsmanlike distrust which has existed of late years where speed records are concerned.

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Aircraft at the British Empire Exhibition

A GROWING demand for space at Wembley is reported by the British Empire Exhibition authorities. As the Exhibition is being planned on a scale far greater than any hitherto attempted (the Machinery Hall and the Industrial Hall cover an area of 884,000 sq. ft.), it has not yet been possible to allocate any definite area to a particular trade. That the aircraft section will be well looked after is ensured by the composition of the Aviation Committee, the members of which are as follows: Maj.-Gen. Sir W. Sefton Brancker, K.C.B. (Chairman); Brig.-Gen. R. K. Bagnall-Wild, C.M.G., C.B.E., R.A.F.; Lieut.-Col. Mervyn O'Gorman, C.B., D.S.O.; Col. F. Searle, C.B.E., D.S.O.; Lieut.-Col. Alec Ogilvie, C.B.E.; Mr. G. Holt Thomas; and Maj. C. C. Turner, F.R.G.S., A.F.R.Ae.S., M.I.Ae.E.

Sky-Writing in America

MAJ. J. C. SAVAGE and Capt. Cyril Turner, his pilot, are at present in America, with the object of introducing the "sky-writing" invented by Maj. Savage. They have taken two aeroplanes with them, so that should any mishap occur to one machine there will still be one available with which to carry on. On November 28 there was a great craning of necks in New York, when Capt. Turner wrote in large letters across the sky, "Hullo, U.S.A.!" We shall be very surprised if Maj. Savage's invention is not readily taken up on the other side. It seems to be particularly suited to American conditions, most of the States being blessed with a much greater proportion of blue sky than are we in this country. In France also the invention has been introduced recently, the Parisians being delighted with the new form of advertising.

The W.R.A.F.O.C.A.

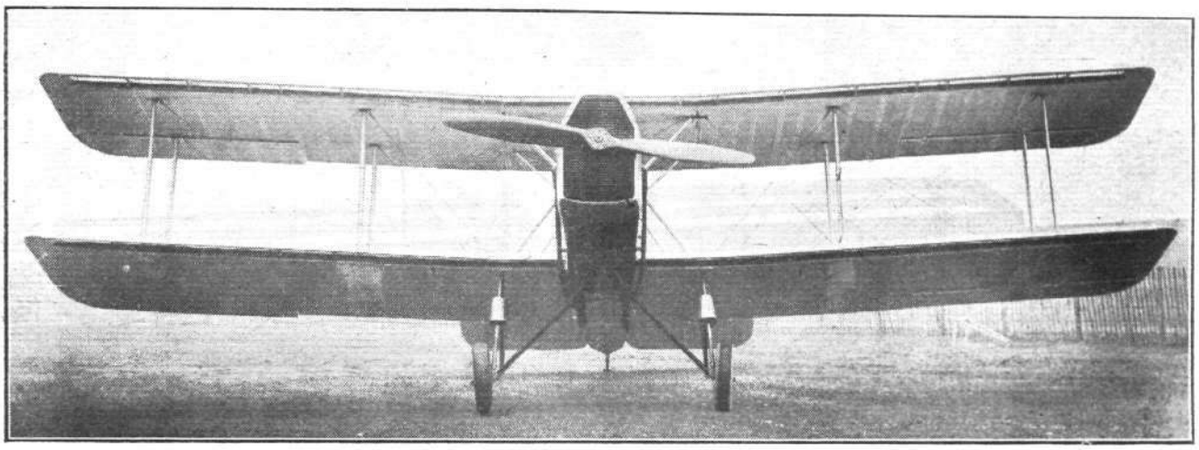
THE Women's Royal Air Force Old Comrades' Association will hold a Christmas Fair and Carnival on December 2 at St. Peter's Hall, Lower Belgrave Street, Victoria Station. It will be opened at 2.30 by Lady Trenchard. The price of admission (including tax) will be 6*d*.

FLIGHT
AIRCRAFT ENGINEER

THE HANDLEY PAGE "HANLEY" TORPEDO 'PLANE

450 H.P. Napier "Lion" Engine

As the first aeroplane to be built for some specific purpose other than the testing of slotted wings, although incorporating this feature as an essential part of the design, very exceptional interest attaches to the Handley Page "Hanley," photographs of the first of which appeared in our issues of November 2 and November 16, 1922. By the permission of the Air Ministry it is now possible to give a detailed description of this machine, with the restriction that no mention is made of the size and weight of the armament which the machine was designed to carry. The particular form of "frightfulness" which the "Hanley" is meant to hand out includes a torpedo, but beyond mentioning this fact as the *raison d'être* of the divided undercarriage we are not permitted to go into details as to mounting, form of discharging, etc., of the torpedo.



THE HANDLEY PAGE "HANLEY" TORPEDO 'PLANE: Front view.

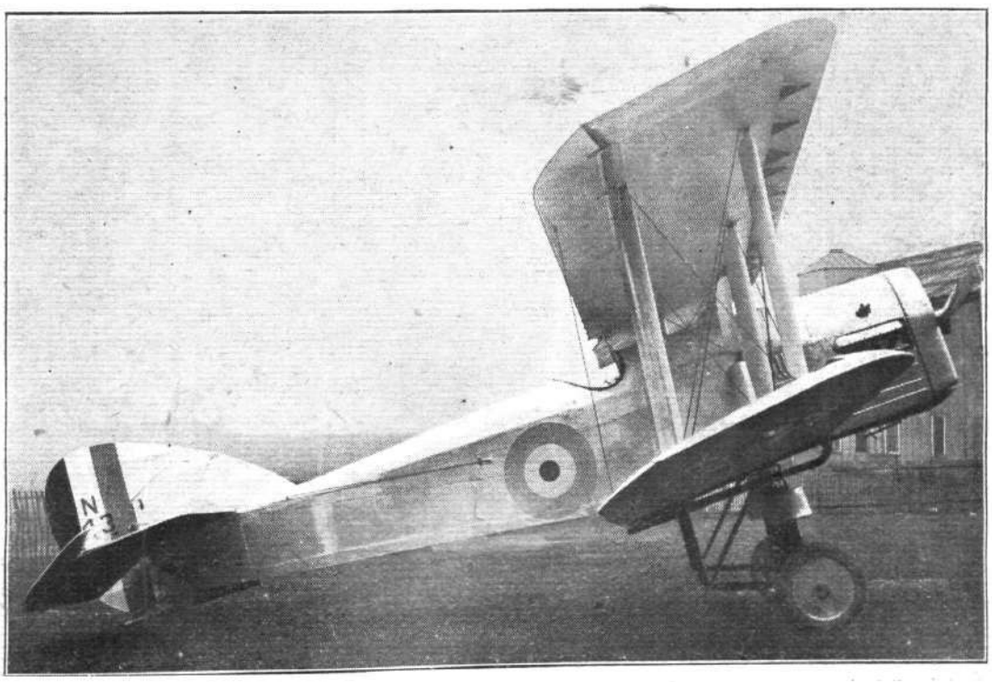
General Design

Having been designed for work from a ship, the "Hanley" had to incorporate certain features, such as low landing speed, small overall size, and folding wings. The first two desiderata form the reason for the use of slotted wings, while the last was a necessary evil (from the aircraft designer's point of view), which at first threatened to complicate to a very considerable extent the mechanism for opening and closing the slots. It will be shown presently, however, that these complications have been reduced to a minimum, and that—apart from the number of "gadgets" necessitated by the work for which the "Hanley" was designed, and which have nothing to do with the use of slotted wings—the control mechanism of a slotted wing need not be either complicated or heavy. The general lines of the "Hanley" are well illustrated in the accompanying scale drawings, which form a useful supplement to the photographs which we have already published. The undercarriage looks needlessly complicated, and as a matter of fact, a more recent model (the present notes refer to the first of the type) shows much cleaner lines, as will be seen from the accompanying photographs.

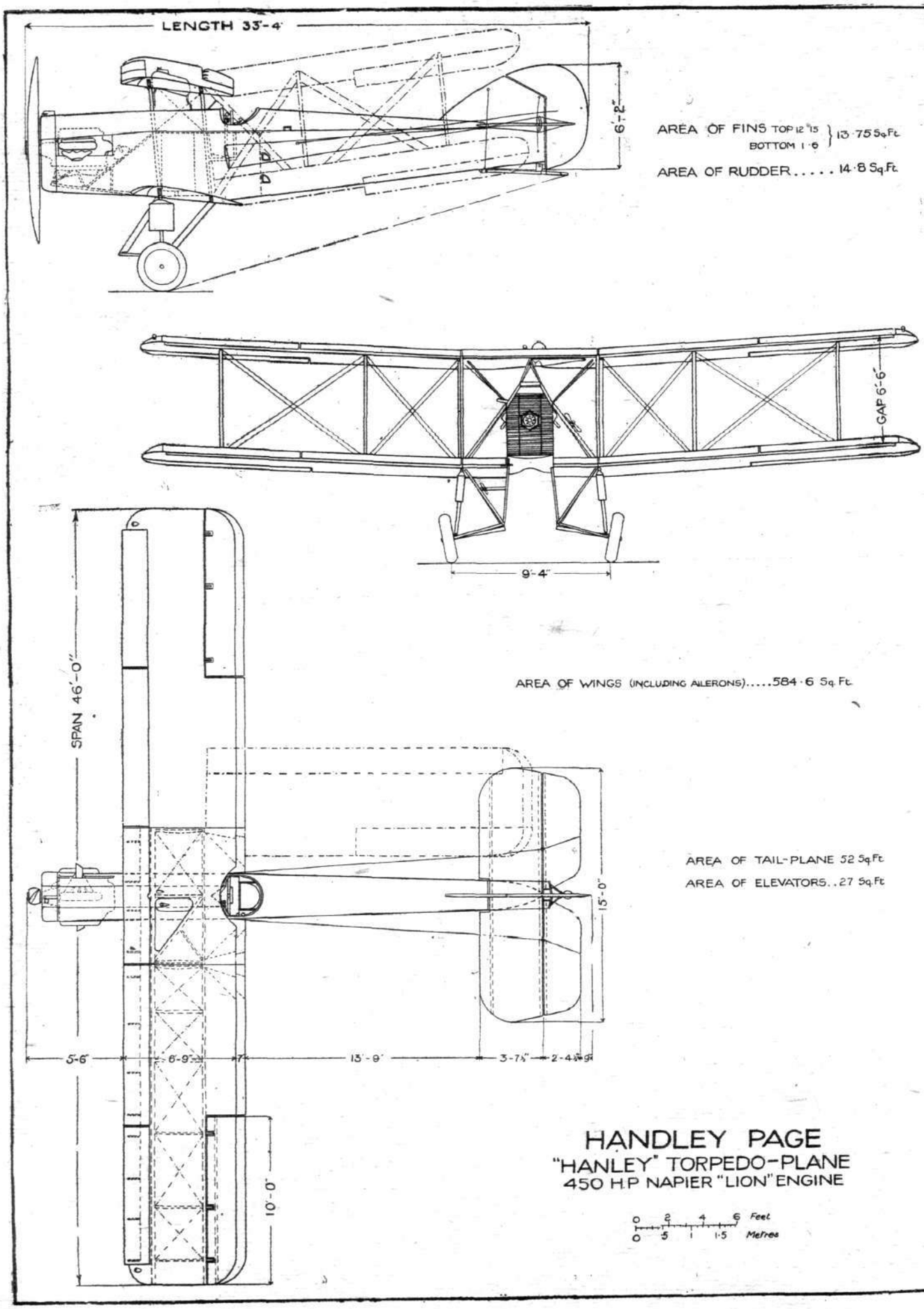
Owing to the restrictions already indicated, we propose in the following description to treat the "Hanley" solely as an interesting aeroplane, without too much reference to features which are connected with the special purpose for which the machine was designed. In other words, we shall deal with such aerodynamic and structural features as might be incorporated in any machine, no matter of which type. In this way our description may prove disappointing to a few who are interested in the machine chiefly as an instrument of war; but it should appeal no less on that account to those with whom the machine as an aeroplane is of first importance and the use to which it might be put a secondary consideration.

The Fuselage

In the main, the fuselage of the "Hanley" is of orthodox design, being a girder built up of spruce longerons and struts,



THE HANDLEY PAGE "HANLEY": Side view.



THE HANDLEY PAGE "HANLEY" TORPEDO 'PLANE: General arrangement drawings of the original machine. The latest type has been altered somewhat, notably as regards the undercarriage.

THE HANDLEY PAGE "HANLEY": Three-quarter front view. These photographs show the latest type, which has been considerably "cleaned-up." Our description and scale drawings refer to the original model, but except for the undercarriage and slotted ailerons, our detail sketches refer to the new model as well.

and braced by streamline wire and tie-rods. Certain of the members and fittings are, however, of considerable interest, and will therefore be dealt with in some detail. The longerons, which are of uniform dimensions, *i.e.*, do not taper from front to back, are made up from two halves glued together. The two halves are spindled out so that the finished longeron, although being of square section externally, is in reality tubular, with packing pieces glued in where the strut attachments occur.

The fact that the longerons do not taper has enabled uniform fittings (except, of course, where local requirements call for a departure) to be used. The form which these take is shown in one of the accompanying sketches. It will be seen that the fitting rests on the longeron, and is not passed around it. It is secured in place by small wood screws, and as the tendency for the fitting to shift, when the bracing is in place, is very small, this is probably quite a satisfactory method, while giving the advantage that in case of damage a longeron can be replaced without interfering with the wire bracing. The attachment of the wires in the transverse panels is interesting. Streamline wires or tie-rods are used, and the threaded ends of the wire are simply passed through the longeron from corner to corner, and locked in place by the usual nuts, locking on a washer bent over the edge of the longeron. In order to retain a smooth edge for the fabric, the extreme edge of the longeron is chamfered off, where this washer occurs, sufficiently deeply to let the nut and end of the wire sink to the level of the unchamfered portion of the longeron.

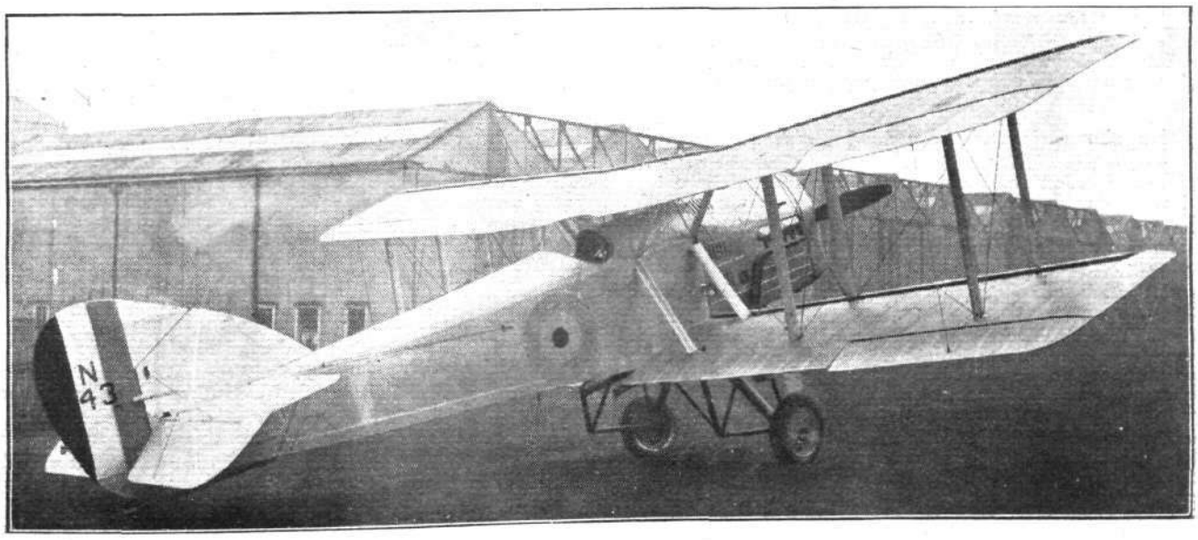
The vertical and horizontal struts vary somewhat, according to location, but, generally speaking, they are spindled out to an I section; here and there one occurs which, requiring greater stiffness, is of a section similar to that of the longerons.

On top the rectangular section fuselage has a deck fairing of light formers and stringers, covered, as are also the sides of the fuselage, with fabric. The bottom of the fuselage, on the other hand, is covered with three-ply wood.

The mounting for the Napier "Lion" is a tubular structure, entirely separated from the main portion of the fuselage by a metal-covered bulkhead. It has been so designed as to give easy access to the engine, although it has not been designed for removal as a complete unit. The engine bearers themselves are of ash, but are supported on steel tubes braced longitudinally, laterally and diagonally by steel tubes and cables. The oil tank is mounted behind the engine, but the petrol tank, a large cylinder standing on its end, is housed in the front portion of the main fuselage. The fuel is led to the engine from a service tank in the top centre-section, the supply pipes passing through the fireproof bulkhead behind the engine. Provision has been made for the rapid emptying of the main petrol tank in an emergency, the discharge of the petrol considerably lightening the machine. A nose radiator is fitted, and is provided with a shutter of usual type.

In the after portion of the fuselage a number of rubber-proofed flotation bags are housed. These bags are tied to the longerons, and extend, with one bag in each bay, from just behind the cockpit to the last bay but one. In the extreme stern there is no bag, as the tail skid is mounted here.

Built as an integral part of the fuselage are the short wing roots of the lower plane. These extend outwards for a short



THE HANDLEY PAGE "HANLEY": Three-quarter rear view.

distance, and are braced to the fuselage by sloping tubes. On the rear spar are the hinges around which the wings pivot when folding, while on the front spar is the fitting for locking the wing in place, as well as the worm and wheel gear (on the starboard side) by which the pilot operates the slot of the lower plane.

The top plane centre-section is carried on sloping struts, and the fittings for folding the wings and operating the slots are generally similar to those of the bottom plane wing roots. The subject of the slot control will be dealt with under the wings.

The Wings

Incorporating as they do the slotted aerofoil invented by Mr. Handley Page, the wings of the "Hanley" are of more than ordinary interest. Regarded purely as aeroplane wings, the planes are of usual construction as regards their main members—spars and ribs. The spars are of spruce, built up to form a rectangular box, and in order to increase the glued area, triangular section strips are glued into the corners of the hollow rectangle. It is of interest to note that the spars are placed at a considerable angle in relation to the chord line. This has probably been done on account of the large angle at which, with a slotted wing, the maximum lift occurs. The result is, however, that the ribs do not lie with their flanges following the upper and lower surfaces of the spar, but form an angle with them. On the top of the front spar a strip runs along so as to make a continuous support for the three-ply covering of the nose of the main aerofoil. This strip can be seen in one of our sketches.

The ribs are of the lattice type, single lattice for the ordinary ribs, and double lattice for those which have forward extensions serving as supporting brackets for the auxiliary aerofoil. The ribs are extremely light, and yet the lattice form of construction appears to render them very rigid.

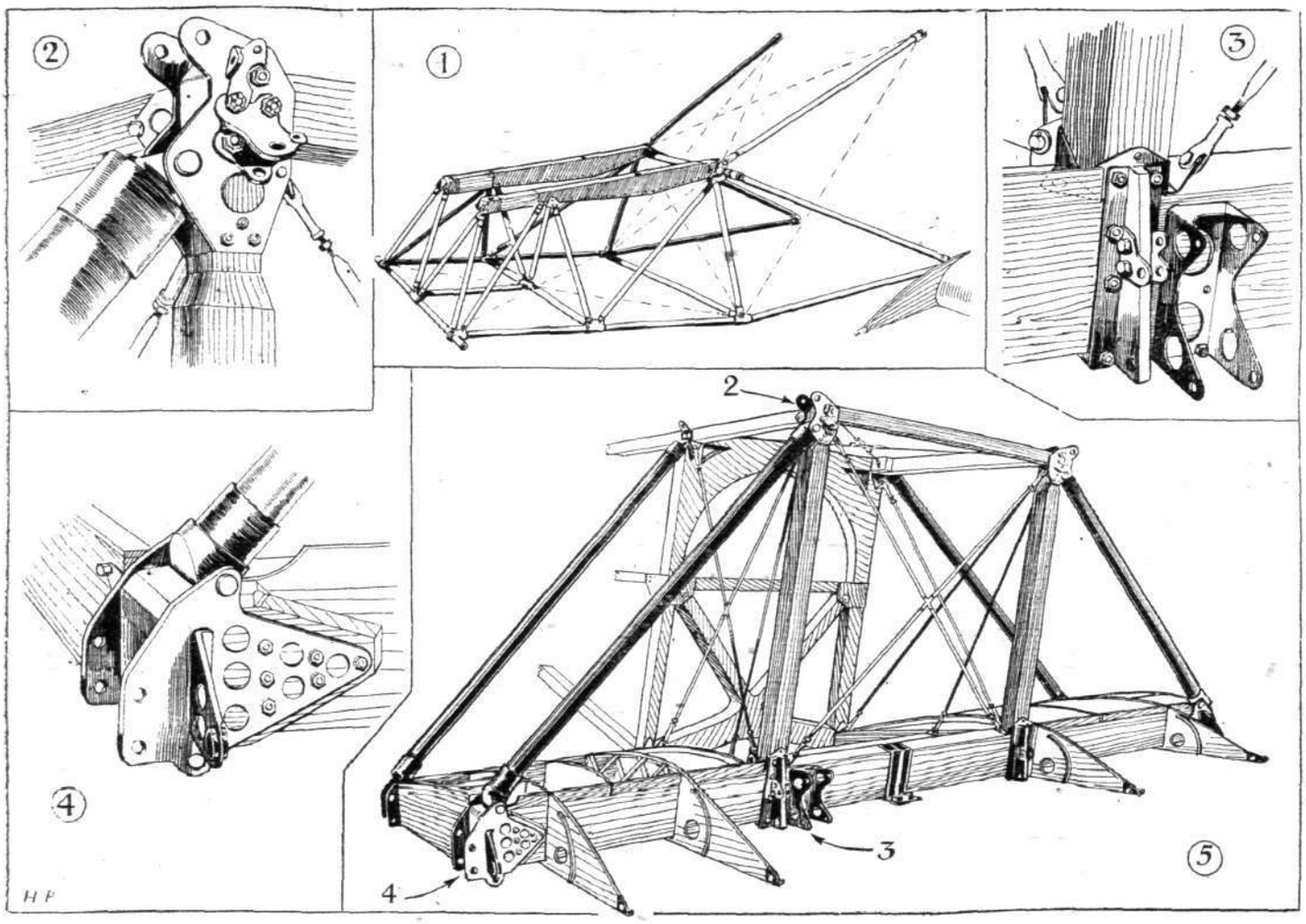
The auxiliary aerofoil, which is in section very like a Joukowsky, is covered with three-ply wood, as it is of the greatest importance that it should retain its shape well, quite small changes in the size and shape of the slot formed between it and the nose of the main aerofoil having a considerable effect upon the behaviour of a slotted wing. The general method of construction employed for the auxiliary aerofoil is indicated in one of our sketches. The leading and trailing edges are formed of solid strips of wood spindled out to U and V sections respectively. The ribs fit into these, and the whole is covered with thin three-ply.

The auxiliary aerofoil is hinged at a number of points lying on a line a short distance back from the leading edge, while the levers by which the auxiliary aerofoil is operated to open or close the slot are secured to points near the trailing edge.

The Slot Control

At this point it may be of interest to discuss the manner in which the slots are opened and closed. To begin with, it should be stated that in the "Hanley," which is of course a biplane, the slots of upper and lower plane are operated independently, there being separate handles for the two sets of slots. The auxiliary aerofoils are, as already mentioned, hinged at points along their length, near their leading edge. The brackets which support these hinges are forward extensions of the wing ribs. The nose of the main aerofoil is covered on its upper surface with three-ply wood, as this surface forms one wall of the slot. Passing along inside the nose of the main aerofoil, underneath the three-ply covering, is a tube, which is carried in phosphor-bronze bearings on the nose ribs of the main aerofoil. This tube can be rotated from the cockpit (by means to be described presently), and carries at intervals lugs welded to the tube. These lugs have small projections, to which are hinged short L-shaped levers of U-section. The upper ends of these levers engage with eyebolts placed in line near the trailing edge of the auxiliary aerofoil. When, therefore, the tube is rotated in one direction, the levers rise, and in doing so open the slot. Rotation of the tube in the opposite direction closes the slot.

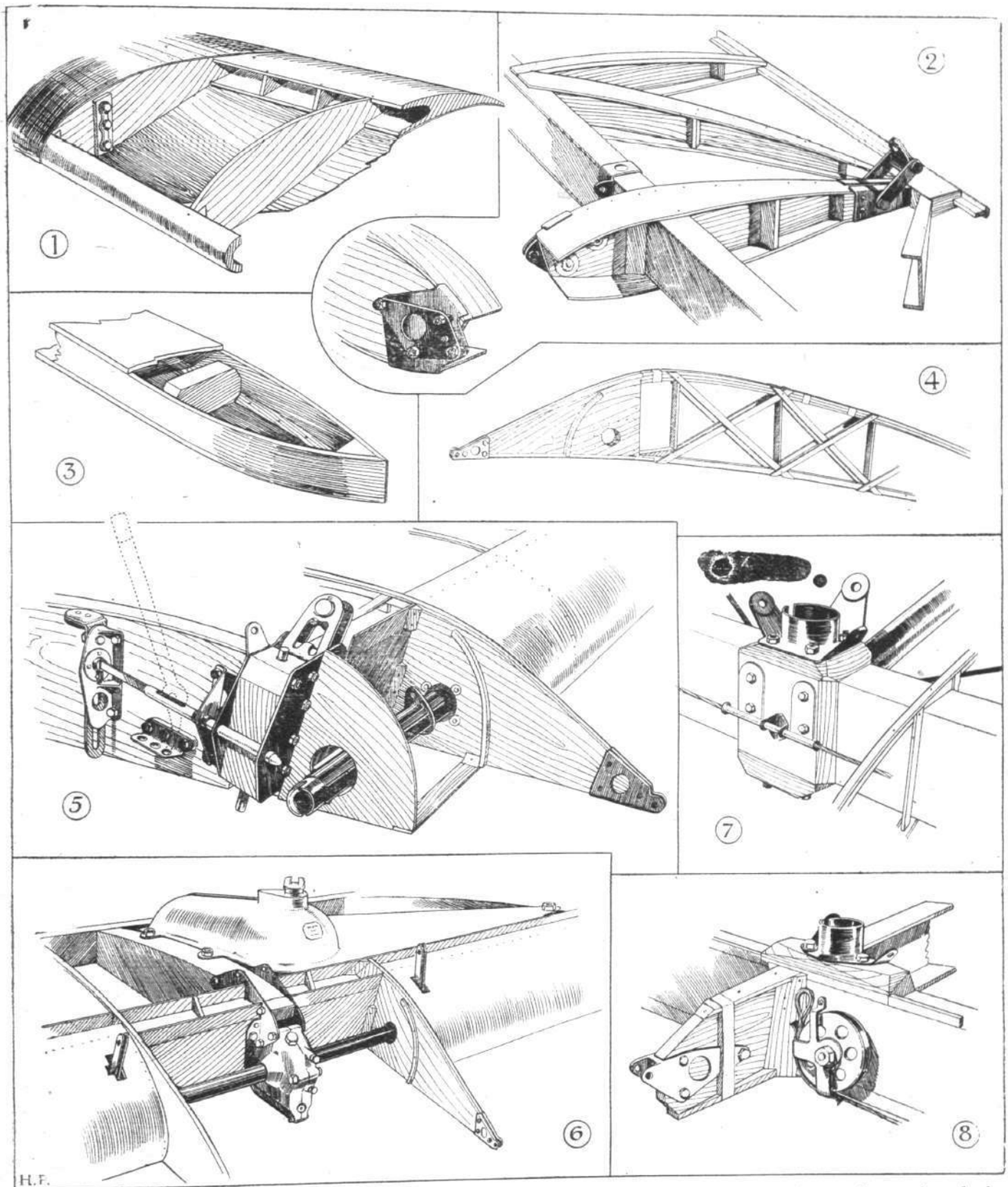
As regards the method of operating the slots from the pilot's cockpit, this is accomplished in a very simple manner. As the methods employed for upper and lower slots are the



THE HANDLEY PAGE "HANLEY": Some constructional details. 1, View of the engine mounting. 2, Attachment of sloping strut to vertical strut and longeron. 3, Brackets for attachment of engine tubes and slot control gear. 4, Lower attachment of sloping strut to wing root spar. The lug projecting forward carries the slot control tube. 5, General view of front portion of fuselage with lower wing spar roots, sloping tubes, etc.

same, we will use as an example the control for the slots of the upper plane. One of our sketches shows the top centre-section, with the gravity petrol tank. In front of the front spar, is mounted a worm and worm-wheel gear. The worm is mounted on the forward end of the pilot's slot control tube, which runs in a fore-and-aft direction underneath the centre-section. On the end nearest the pilot is a short crank handle, turning of which turns the worm and, through that, the lateral tubes operating the levers of the slot control.

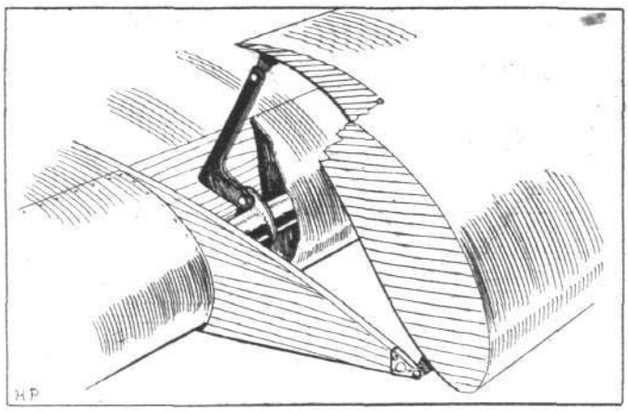
A short section of the transverse tube remains in position



THE HANDLEY PAGE "HANLEY": Some constructional details of the wings. 1, partly-sectioned view of a portion of the auxiliary aerofoil. In shape this resembles the famous Joukowsky wing section. 2, shows the construction of an aileron. Note the triangulated construction. The shackle near the trailing edge receives the wire to the top aileron, while the fitting on the nose of the rib, shown in more detail in the inset sketch, is for the return cable. 3, section of the end portion of a built-up box spar. Note the triangular section corner strip, which provides large glued area. In 4 is shown one of the double lattice ribs which carry the brackets on which the auxiliary aerofoil is mounted. The nose of the main aerofoil is formed by thin three-ply, bent over the small curved strip screwed to the bracket. 5, details of the locking pin and spar fitting on the lower plane at the point where the wing is joined for folding. A lever is used for pulling back the locking bolt when the vertical slide at the back has been raised. 6, details of the slot-operating mechanism. The tube from the pilot's controls carries on its front end a worm, which engages with a worm wheel on the transverse tube in the leading edge. Rotation of this tube raises or lowers the auxiliary aerofoil through levers hinged to lugs on the tube, thus opening or closing the slot. 7, inter-plane strut socket on the lower plane rear spar. 8, lower spar, with bracket for aileron hinge.

in the centre-section, and terminates at each end in a ball joint. The socket portion of this joint is formed in the ends of the wing tubes, and is slotted as shown in one of our sketches. The ball in the centre-section tube has a pin through it, the ends of which engage in the slot in the wing tubes, thus transmitting the torque. When the wings are folded the ball comes out of the socket, and on spreading the wings again all that is necessary is to ensure that the wing tubes are so placed as to allow of the slots engaging with the pins.

The slots in the lower plane are similarly operated, but the control for these runs from the starboard side of the pilot's cockpit down to the bottom centre-section, and upper and lower slots are separately controlled. The gearing between the worm and worm-wheel is such that it requires about 20 turns of the control handle to change from slot fully open to



Slot-operating mechanism of the Handley Page "Hanley."

slot fully closed. Means are provided for preventing the pilot from "overwinding" the slot gear.

The method of locking the wings in place when spread for flight is interesting. The locking bolt extends aft for a distance of several inches from the front spar. Its rear portion has flats machined on it, and works in a guide mounted on a small bracket, as shown in one of our sketches. Behind this bracket is a slide, in which is a slot of just sufficient size to let the rear end of the bolt pass through. When the slide is raised until this opening coincides with the bolt, and not until then, the bolt can slide back and unlock the wing. While the slide is down it effectively prevents the bolt from coming out accidentally. As it has been found that the bolt is likely to bind somewhat in the wing spar fittings, means have been provided for facilitating the sliding backwards and forwards of the bolt. This takes the form of a short lever, normally carried in the cockpit, which is inserted in a slot in the bolt, and, using as a fulcrum one of the three holes in the small bracket shown on the sketch, the bolt is easily shifted. The object of the flat on the rear end of the bolt now becomes apparent. It prevents the bolt from turning into such a position that the slot in it is no longer vertical, in which case the lever could not be inserted. We have, perhaps, devoted an unnecessarily large space to a description of this fitting, but it appears to us that it is just in the care of the design of such details that the daily use of a machine will show the difference between practical and impractical design.

The ailerons of the older machine are of the balanced type, with brackets supporting the ailerons some distance from their leading edge. Thus the balance is provided by the portion which lies between the rear main spar and the front spar of the aileron. Both the control cables and the cables connecting the leading edges of upper and lower ailerons pass inside the fairing of the rear inter-plane struts, the former being shown passing over a pulley in one of our sketches. On a later model, slotted ailerons, similar to those described and illustrated in our description of the Handley Page W. 8 C. in the issue of November 16, 1922, are used. These combine the slot effect with the balanced aileron, and have been found very effective in use, even at large angles of incidence.

The Tail

Both in outward shape and in internal construction, the tail of the "Hanley" is built on orthodox lines. The tail plane is of the trimming type, to which the divided elevator is attached. The rudder has a triangular balance working in a cut-out portion of the fixed vertical fin. The controls also are of standard type, with a foot bar for the rudder and a vertical column for the elevator control.

The Undercarriage

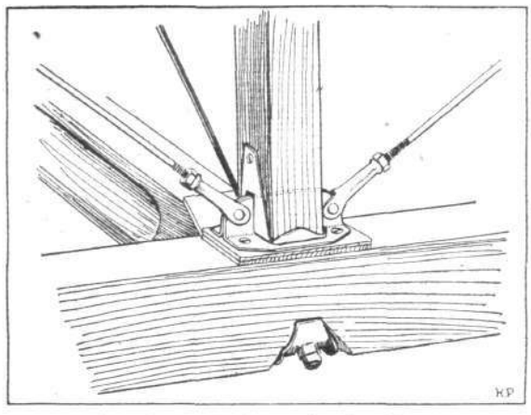
As will be seen from the general arrangement drawings, the under-carriage is of the divided type, necessitated, of course, by the fact that the machine is designed to carry a torpedo. Regarding the latter and its mounting, nothing may be said; but it is permissible to point out that in a later type of machine, photographs of which we also publish this week, the undercarriage structure, which is somewhat complicated in the original model, has been very considerably "cleaned up." The wheel track is wide, and landing shocks are transmitted through the sloping struts to the fuselage. The tail skid is a long straight tube, sprung by rubber cords inside the fuselage.

The Pilot's Cockpit

Owing to nature of the machine, a certain amount of restraint is necessary in describing the "office." The pilot's seat is placed just aft of the trailing edge of the top plane. In front of him he has an instrument-board with an unusually great number of "gadgets." Apart from the instruments necessary for flying, such as air speed indicator, altimeter, clock, compass, revolution indicator, radiator thermometer, etc., there are others whose functions are connected with the "freight" for which the machine is designed. The handles for operating the slots are placed, one in the top centre-section and one on the starboard side of the cockpit coaming. Then there is the handle for trimming the tail plane, and a wireless set with aerial, etc.

The controls, as already mentioned, are of usual type, with a wheel for the ailerons, fore and aft movement for the elevators, and a foot bar for the rudder. The cockpit is electrically lighted, with a number of small lamps illuminating the various instruments, and each capable of being switched on or off as required. The necessary current is generated by windmill-driven generators, placed outside the fuselage, in the slip stream from the propeller.

At the moment it is not thought advisable to publish figures relating to the weight and performance of the Handley Page "Hanley," except to state that the total loaded weight is about 6,400 lbs., which, with a wing area of 584, gives a wing loading of nearly 11 lbs./sq. ft. It is also of interest to note that the "cleaning-up" of the latest model has resulted in an astonishing gain in maximum speed. For this no doubt the simpler undercarriage is mainly responsible,



Standard fuselage fitting of the Handley Page "Hanley."

although a good deal of the credit should probably be ascribed to the new Watts-Lang two-bladed propeller.

The ailerons of the first machine were found to give rather inadequate control at large angles of incidence. This meant that it was difficult to take full advantage of the low landing speed which the slotted wings made possible. In the new model the slotted ailerons have been found, during a number of recent test flights, to be extremely effective right up to the angle of maximum lift, with the result that it is possible to land the machine as slowly as the extra lift obtained with the slotted wings will allow. It thus appears that a necessary complement to the Handley Page slotted aerofoil is slotted ailerons. The manner in which these work has already been described in our recent article on the W. 8 C., in which they are to be used. It might be pointed out, however, that even on ordinary wings the slotted ailerons have been found very effective, and as the majority of machines could be landed considerably slower if the controls were effective at large angles, there would appear to be excellent reason for a wider adoption of ailerons of this type. Apart from the extra effectiveness, the slotted ailerons have the advantage that they are balanced, and consequently easy for the pilot to operate.

FLIGHT

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

RACING COMMITTEE

A Meeting of the Racing Committee was held on November 16, 1922, when there were present Maj.-Gen. Sir W. S. Brancker, K.C.B., in the Chair; Commander James Bird; Lt.-Col. W. A. Bristow; Lt.-Col. M. O. Darby; Mr. H. P. Folland; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; Lt.-Col. F. K. McClean, A.F.C.; Mr. W. O. Manning; Mr. T. O. M. Sopwith. In attendance: Lt.-Col. M. O'Gorman, C.B., and the Secretary.

Schneider Cup.—The Regulations for the Schneider Cup were considered with a view to deciding upon the recommendations to be made to the F.A.I. at its Meeting in January.

It was decided to recommend that the seaworthy test, consisting of taxying over two distances of half a mile each, should precede the flotation test of six hours, and that for the speed test the competitors should all be started at the same time.

The question as to where the Race should be held was considered and deferred.

GLIDING COMMITTEE.

A Meeting of the Gliding Committee was held on Thursday, November 16, 1922, when there were present Lt.-Col. M. O. Darby, in the Chair; Lt.-Col. W. A. Bristow; Maj. O. T. Gnosspelius; Lt.-Col. F. K. McClean, A.F.C.; Mr. W. O. Manning; Lt.-Col. A. Ogilvie; Mr. F. Handley Page; Sqdn. Ldr. M. E. A. Wright; and the Secretary.

Selfridge 50-Mile Gliding Competition.—The Secretary reported that Messrs. Selfridge and Co., Ltd., had offered, through the Royal Aero Club, a Prize of One Thousand Guineas for the first flight of 50 miles on a glider, open to British subjects on a British machine.

The Committee proceeded to draft the Regulations.

COMMITTEE MEETING

A meeting of the Committee was held on Wednesday, November 22, 1922, when there were present Lt.-Col. J. T. C. Moore-Brabazon, M.C., M.P., in the Chair; Lt.-Col. W. D. Beatty, C.B.E.; Group-Capt. F. W. Bowhill, C.M.G., D.S.O., R.A.F.; Mr. Ernest C. Bucknall; Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; Lt.-Col. F. K. McClean, A.F.C.; Lt.-Col. Alec Ogilvie; Lt.-Col. Mervyn O'Gorman, C.B.; Mr. F. Handley Page; and the Secretary.

Election of Members.—The following new Members were elected :—

Franklyn Leslie Barnard.
Lt.-Col. John Barrett-Lennard.
James Laurence Neville Bennett-Baggs.
Harold Butler Wyn Evans.
Maj. Harold Edward Strachan Huth.
Sir Samuel Instone.
Lieut. Leonard Mansfield Robinson, R.N.

Sub-Committees.—Reports from the following Sub-Committees were received and adopted :—House Committee, Finance Committee, Gliding Committee, Racing Committee.

Gliding Record.—The performance of A. Maneyrol on the Peyret Glider at Itford Hill on Saturday, October 21, 1922, when he remained in the air for 3 hours 21 mins. 7 secs., was passed as a British Duration Record under Class "D" of the F.A.I. Regulations. It was decided to submit the performance to the F.A.I. for a World's Record.

Schneider Cup.—The report of the Aero Club of Italy containing the official figures of the performance of the Supermarine Napier Flying Boat in winning this year's Schneider Cup Race was received. It was decided to request the Aero Club of Italy to submit the figures to the F.A.I. with a view to World's Records for Speed for Seaplanes being granted to Capt. H. C. Biard, the pilot of the Supermarine Napier Flying Boat.

F.A.I. Rome Conference.—Lt.-Col. M. O'Gorman, who attended the Conference of the F.A.I. held in Rome on October 8 to 12 on behalf of the Royal Aero Club, submitted his report.

A vote of thanks was unanimously passed to Col. O'Gorman, for attending the Conference.

F.A.I. Paris Conference.—The following were appointed to represent the Royal Aero Club at the Committee Meeting of the F.A.I. to be held in Paris on January 3, 1923 :—Lt.-Col. M. O'Gorman, Lt.-Col. M. O. Darby, H. E. Perrin.

Vacancy on Committee.—Lt.-Col. M. O. Darby was co-opted to the Committee to fill the vacancy caused by the death of Lord Northcliffe.

Society of Model Aeronautical Engineers.—It was decided to recognise the Society of Model Aeronautical Engineers as the body to control Model Aeroplane Competitions, the appointment to be for one year, and to be reconsidered at the end of that period.

Aviators' Certificates.—The following Aviators' Certificates were granted :—

7932.	Gilbert Edward Nicholetts	August 19, 1922.
7933.	Richard Claude Hancock	September 28, 1922.
7934.	George Carr Rayden ..	June 28, 1918.
7935.	Nils Nilsson (Swedish subject)	August 25, 1922.
7936.	Lieut. Leonard Mansfield Robinson, R.N. ..	October 31, 1922.

F.A.I. ROME CONFERENCE

At the Conference of the F.A.I. held in Rome, October 8 to 12, 1922, it was decided that a competitor of the nationality of a country not represented on the F.A.I. may be granted a competitors' licence by the country represented on the F.A.I. holding the competition. The licence is only to be valid in the country in which the licence is issued.

Entries for International Competitions.—It was decided that dates of entries for International Competitions, once fixed, must not be changed.

Regulations for Gliding Contests.—Class "D," Article 31, of the General Regulations of the F.A.I., was altered to read as follows :—"Aeroplane without motor" shall be taken to mean any machine which is only sustained dynamically without any mechanical power of support or propulsion. Human muscular force is allowed.

Extension of the Straight Line Course for Speed Records.—The Conference decided that after April 1, 1923, all speed records must be made over a straight line course of 3 kms. instead of 1 km. as at present.

Tryptique.—The question of the Tryptique raised by the Royal Aero Club was considered. The form of Tryptique as drawn up by the F.A.I. Legal Committee and the form put forward by the Aero Club de France were submitted, and ordered to be issued to the Aero Clubs represented on the F.A.I. with a recommendation that each Club should obtain the approval of their Governments. The French Customs had already given its approval to the institution of the tryptique. It was urged that the deposit required in the first place should be small.

1923 Conference.—It was decided to hold the 1923 Conference at Gothenburg in August next.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.
H. E. PERRIN, Secretary.

Waziristan Honours

IT is announced in the *London Gazette* of November 21, that the King has approved of the following rewards in recognition of gallant and distinguished service in Waziristan :—

Bar to the Distinguished Flying Cross

Flying Officer C. McC. Vincent, D.F.C.

Distinguished Flying Cross

Flt.-Lieut. W. A. Coryton, M.V.O.
Flt.-Lieut. A. L. Fiddament.

Guynemer Memorial in Paris

A MEMORIAL to Captain Guynemer, the famous French military airman, who was killed in the War, was unveiled last Thursday at the Collège Spanislas, Paris, of which he was an old pupil.

The memorial is a *bas-relief* portrait showing Guynemer in airman's uniform, with an aeroplane propeller in the background. M. Léon Bérard, Minister of Education, presided at the ceremony, and made a speech in which he celebrated the amazing adventure of this young Frenchman who passed from college to the Panthéon.

GLIDING, SOARING AND AIR-SAILING

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, *who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.*

AMONG the German gliders developed for this year's Rhön competition were a few in which longitudinal and lateral control was effected by pivoting the main planes, the two halves of which moved together for longitudinal control and independently for lateral control. This type of control was found in several instances to be superior to the more usual type, and such authorities as Professor Prandtl of Göttingen and others, incline to the opinion that, when we come to experiment with true "gust-soaring" as distinct from gliding in an upward air current the pivoted wing has even more to recommend it, owing to the rapidity with which its angle can be changed in order to take advantage of a gusty wind.

* * *

SOME of the German gliders, notably the von Loessl, constructed by the Caspar works of Trawemünde, had their wings pivoted in such a way that they automatically changed their angle of incidence according to the relative velocity of the air over them. Owing to certain shortcomings in the design, the Sb–3, as the machine is called, did not quite come up to expectations, but it offered certain very interesting features which will be further developed during the next few months.

* * *

IN connection with this "gust-soaring" or dynamic gliding, it appears to us that due notice has not as yet been taken of the possibilities of the use of variable wings such as the Fairey hinged trailing edge variable camber wing, and the Handley Page slotted wing. Both these forms, affording as they do a rapid variation in lift, and the possibility of fairly heavy wing loading, would seem to be capable of very useful application to gliders.

* * *

BROADLY speaking, what is required in order to be able to take advantage of the speed variations in a wind, assuming such wind to be turbulent and not steady, is to glide at a flat angle, but not at a particularly low speed, while the air is fairly steady, or in the lulls. When the machine meets a gust head-on, the lift should be rapidly increased so that the momentum of the machine is used for overcoming the extra resistance which accompanies the increase in lift. Now with the Fairey variable camber wing, or the Handley Page slotted wing, it is possible to provide a good L/D ratio at fairly low lift coefficients, *i.e.*, at relatively high speeds. The high speeds mean high momentum, so that, when the trailing edge in the Fairey and the slots in the Handley Page wing are operated to give increased lift, the machine has sufficient momentum or kinetic energy to overcome the increased resistance, with the result that the machine climbs, *i.e.*, the kinetic energy is transformed into potential energy. Theoretically the same could be done by the ordinary glider, but it would appear that the time required, owing to the moment of inertia of the machine, would be considerably longer than the time required to open the slots of the Handley Page or pulling down the flaps of the Fairey wing. The subject is one which seems worth while going into more fully, and we rather imagine that if anyone should be interested to the extent of wishing to build gliders incorporating these features, neither Mr. Fairey nor Mr. Handley Page are likely to prove over strict in the matter of royalties for the use of their patented devices.

* * *

IT is obvious that in the case of either wing, the operation of the variable gear should be as rapid as possible. This means that the flaps of the Fairey or the slots of the Handley Page wing should be controlled by a lever, and not by wheels or handles, which would make the operation too slow. The question then arises, would the load on the control lever be too heavy, and would the stresses imposed on the wings be too great? As a glider would, in any case, be fairly lightly loaded, as compared with a power-driven machine at any rate, probably the stress question need not be very serious, and the force required to operate either flaps or slots should not be very great either, so that there would not appear to be any great practical difficulties in the way. The weight of either flap or slot gears should not be excessive either, so that, superficially, there would seem to be little against their use, while a considerable gain might easily result.

* * *

APART from the use of slotted wings for dynamic gliding, the use of slotted ailerons might be a considerable advantage on all gliders, as it has been found that the slotted ailerons are very effective. Thus it might be possible to increase very materially the controllability of gliders, and the experience of all competitors at Itford was that the controllability was rather poor. Even for "sitting on a jet of air" considerable controllability is necessary, so that experiments with variable wings should be interesting at least, and might also provide full-scale data of value in the design of power-driven machines. As we have already mentioned, we do not suppose that either Mr. Fairey or Mr. Handley Page would raise serious objections, provided any information which became available as a result of gliders with variable wings was placed at their disposal.

* * *

UP to the present no decision has been reached regarding the rules and regulations for next year's competition for the Selfridge Prize of 1,000 guineas. Owing to the fact that the competition will be open throughout the year, the framing of rules which will give all competitors a fair chance, without imposing too great demands upon the Royal Aero Club in the matter of sending out official observers, is naturally a difficult matter, and we are pleased to note that the Gliding Committee of the Club are not allowing themselves to be hurried in this matter. So long as the rules are announced before the end of the year, potential competitors should have no cause for complaint, and it is obviously far better to devote a fair amount of time to the drafting of rules than to get them out in a hurry, only to discover later that if such and such a thing had been done better results would have been achieved.

* * *

IN this connection it is not without interest to examine what the Germans are doing as regards the organisation of the competition for the prize of 100,000 Marks, presented by the *Berliner Tageblatt*. This prize is also, like our own Selfridge prize, for the greatest distance covered in one flight on a motorless aircraft. It is confined to German pilots on German machines. The distance covered will be measured on an official map to a scale of 1 : 25,000 in a straight line from point of departure to point of landing.

* * *

EVIDENTLY the Germans were also somewhat puzzled as to ways and means of observing the flights officially. In the end it was decided that the start of each attempt should be officially observed by two officials representing the Automobil- und Flugtechnischen Gesellschaft and the Aero Club of Germany. These observers will be required to state on oath the exact point of departure, the time, identification of the machine and occupants, that the barograph (which is to be carried in a position inaccessible to the pilot, and sealed) was functioning properly at the time of departure, take photographs of the machine from two sides, showing identification marks or numbers, and a portion of the 1 : 25,000 map showing the exact point of departure.

* * *

FOR observing the landing, two official observers, with the same qualifications, suffice, but should it happen, as it very easily might, that official observers are not near enough to see the actual landing, four persons, who saw the machine actually landing, and whose integrity is vouched for by the local police, may serve as official observers. They must declare on oath that the machine landed on the spot indicated, that the barograph was functioning, and they must ascertain the time by the pilot's watch in order that this may be used as a check on the barograph time. They must also convince themselves that the spot marked by the pilot on the 1 : 25,000 map is the exact spot on which he landed.

* * *

THIRDLY, the pilot may send in the barograph chart, previously marked by the official observers of the start, and bearing the stamp of any local police or military authority, with a declaration to the effect that the chart was taken out of the sealed barograph at a certain time and place in his presence.

* * *

IN all this there is precious little that would be suitable for use in this country. From what we know of the casual observer of an aircraft, the accounts given by eye-witnesses would carry little weight, and by the time a pilot had found a local police constable, got him by hook or by crook to the machine, and got him to stamp the chart (if indeed he could be persuaded to do so) all sorts of things would have happened. However, it is possible that there may be, in these German regulations for next year's *Tageblatt* competition, the germ of an idea. The swearing-in of witnesses hardly appeals to us, and a plain statement would carry as much weight.

FLIGHT

LONDON TERMINAL AERODROME

Monday evening, November 27, 1922

TRAFFIC has suffered from the aftermath of the foggy spell last week. It is a noteworthy fact that not only does fog prevent the smooth running of the services, but it has an adverse effect on advance passenger bookings. Would-be passengers seem to steer clear of booking by air, for several days ahead, even when it is almost certain that the fog will have cleared; and after a spell of fog there is quite a time-lag before bookings resume their normal flow.

The efforts of both the Air Ministry and the Marconi Company to improve the wireless telephones fitted to the "air expresses" are now being justified in the much longer range, and in the clearness of the messages. During this last week Daimler pilots have been exchanging messages with Croydon when they were actually circling above the Amsterdam Aerodrome prior to alighting there, while one of the Grands Express Goliaths has been heard operating when above Dijon; and Mr. Bouderie speaks mysteriously of one of their pilots being in touch with Lausanne within a few minutes of leaving Croydon.

Manchester-London "Air Express" Record

THE fastest journey yet made between Manchester and London was accomplished on Friday, when one of the Daimler 34's flew from Manchester to Croydon in 80 minutes. The machine arrived over the aerodrome at a height of 6,000 ft., and another four minutes was occupied in losing height and landing, making the time from leaving the ground at Manchester to alighting at Croydon 84 minutes. Capt. Hinchliffe also made a rapid return flight from Amsterdam to London and back during the week, being only 5½ hours away from Amsterdam, including the time taken to change machines and passengers at Croydon.

The Instone Air Line have made arrangements for landing at Tirlemont to refuel their machines on the London-Brussels route, and are now alighting there instead of at Lympne. On Saturday they carried as passenger the Lord Bishop of Bangor, who is now in his 78th year, and who was travelling to Cologne to preach to the troops of the Army of Occupation in Cologne on Sunday.

The C.M.A. air-lines have begun an early-morning newspaper service between Lympne and Paris, the first machine on this service leaving Lympne at 7.40 this morning, and arriving at Paris at 9.35 a.m. They intend to make the return trip to Lympne, carrying fresh fruit and vegetables from Paris for the London market, and these will be sent on from Lympne by train. This has been arranged in order to prevent any Customs' delay, as no dutiable goods will on any account be carried on these machines.

The traffic-movement board that delights all schoolboys who make the aerodrome a regular rendezvous, has been taken down, and I understand it is to be enlarged to take in all the new lines, such as Manchester, Cologne, and possibly Berlin. The weather report board remains in its original form, and the additional weather reports for the new routes are displayed in full on a notice-board near by. This is, after all, a fuller method of exhibiting reports, as they contain very important information which, for some reason or other, is omitted from the big board.

Speaking of meteorology makes one hope, by the way, that means will be found to increase the frequency of such reports from the Manchester air-station. When there is fog to be considered, they should come in far oftener than they do.

The wonderful Daimler 34, G-EBBS, which has now nearly 800 hours' flying to its credit, returned from Stag Lane yesterday, after having been fitted with an adjustable tail.

Firework Display for Passengers

DURING one or two recent days "air expresses" arriving above the aerodrome when it is mist-enshrouded, the passengers, looking out of the windows, have seen a fine display of "fireworks." Rockets sent up from the 'drome, to indicate its location to the pilot, have been penetrating right through the bank of mist, and then exploding brilliantly in the clear atmosphere above.

Vice-Admiral Mark Kerr, veteran air enthusiast, has just been surprising us again. Going up in a dual-control "Avro," the other day, with Capt. Muir, the Admiral (who is now in his 59th year) astonished everyone by "looping" the machine most dexterously, after which he put it into a "spin," and got it out again in a manner which was masterly in its skill.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN NOVEMBER 19 AND NOVEMBER 25, INCLUSIVE

Route (including certain diverted journeys)	No. of flights*	No. of passengers	No. of flights carrying: Mails	No. of flights carrying: Goods	No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
						h. m		
Croydon–Paris	14	33	5	11	13	2 40	H.P.W.8B G-EBBI (2h. 21m.)	B. (2), G. (6), H.P.W.8B (3), Sp. (2).
Paris–Croydon	13	46	5	13	12	2 55	H.P.W8B G-EBBI (2h. 32m.)	B. (2), G. (6), H.P.W.8B. (3), Sp. (1).
Croydon–Brussels–Cologne	4	9	4	—	4	4 18	D.H. 34 G-EBBV (3h. 54m.)	D.H. 18 (1), D.H. 34 (3).
Cologne–Brussels–Croydon	5	11	4	—	4	3 54	D.H. 18 G-EAWW (3h. 37m.)	D.H. 18 (2), D.H. 34 (3).
Croydon–Rotterdam ...	6	2	6	6	4	2 35	Fokker H-NABN (2h. 35m.)	F. (6).
Rotterdam–Croydon ...	6	10	6	6	6	2 47	Fokker H-NABI (2h. 40m.)	F. (6).
Manchester–Croydon–Amsterdam	6‡	22	—	1	6	5 29	D.H 34 G-EBBQ (5h. 29m.)	D.H. 34 (2).
Amsterdam–Croydon–Manchester	6§	5	5	—	5	6 30	D.H. 34 G-EBBY (6h. 23m.)	D.H. 34 (2).
Total for week ..	60	138	35	37	54			

* Not including "private" flights. † Including certain journeys when stops were made *en route*.
‡ Man.–Stg. Lane 1, Croy.–A'dam. 2. § A'dam.–Croy. 3, Croy.–Man. 1.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.)
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. Sp. = Spad.
Vi. = Vickers Vimy. Vu. = Vickers Vulcan. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Daimler Hire, Ltd.; Handley Page Transport, Ltd.; Instone Air Line; Koninklijkie Luchtvaart Maatschappij; Messageries Aériennes.

Incidental Flying.—Mr. Perry tested two Bristol Fighters and two Sopwith Snipes at Croydon for the Aircraft Disposal Co., and together with Mr. Piercey left for Dublin on the 24th, both on Bristol Fighters.

NOTICES TO AIRMEN

Standardisation of Terms Defining Visibility

1. The scale for the specification of visibility has been revised, and the plain language terms used in meteorological reports now have the significance shown in the following scale :—

Descriptive terms for visibility.	Description of fog intensity.	Objects not visible in daylight at a distance of :—
Very bad	Very dense fog	25 metres or 27 yards
	Dense fog	50 ,, 55 ,,
	Thick fog	100 ,, 110 ,,
	Rather thick fog	200 ,, 220 ,,
	Fog	500 ,, 550 ,,
Bad	Moderate fog	1,000 ,, 1,100 ,,
Very poor	Mist or thick haze	2,000 ,, 1¼ miles.
Poor		4,000 ,, 2½ ,,
Moderate	Slight mist or haze	10,000 ,, 6¼ ,,
Good	—	20,000 ,, 12½ ,,
Very good	—	50,000 ,, 31¼ ,,
Excellent	—	Objects visible at 50 kilometres and beyond.

2. An object is regarded as being visible if it can be distinguished by the eye, *e.g.*, if the object is a tree and it can be distinguished as a tree, it is considered to be visible.

3. The size of the objects selected for use with the scale given in paragraph 1 depends upon the distance ; at 2 miles the object may be a tree or a house ; at 10 miles it may be a tower or a large chimney stack, or a small wood, or an outstanding feature on a hill.

4. If the visibility is stated in yards or miles, the statement means that certain objects are visible at the stated distance.

5. At night, the descriptive terms will be used to denote as nearly as possible the same degree of atmospheric obscurity.

6. Notice to Airmen No. 82 of 1921 is cancelled.

(No. 128 of 1922.)

Norway : Prohibited Areas

1. The following is substituted for the first six lines of paragraph 3 of Notice to Airmen No. 70, of 1921 :—

"No aircraft may fly over the following areas, or approach their borders within a distance of *five* kilometres, except along certain routes determined by the Ministry of Defence."

(No. 130 of 1922.)

British Aircraft Personnel : Visas

THE arrangements under which the operative members of the crews of British aircraft no longer require a visa when flying to certain countries, as notified in Notice to Airmen No. 110 of 1922, have been extended to include Spain.

(No. 132 of 1922.)

NOTICE TO GROUND ENGINEERS

W/T Installation and Earth System in Aircraft : Standard Requirements

1. THE attention of Ground Engineers licensed in Category E (10), Electrical Bonding, is directed to the Air Ministry standard requirements in respect of the W/T Installation and Earth System in aircraft.

2. Ground Engineers responsible for signing daily certificates of safety for aircraft in which W/T apparatus is installed may obtain copies of these requirements on application to the Secretary (D.C.A.), Air Ministry, London, W.C. 2.

(No. 12 of 1922.)

R.A.F. MEMORIAL FUND

A MEETING of the Executive Committee of the Fund was held on November 22. There were present Lord Hugh Cecil (Chairman), Dame Helen Gwynne-Vaughan, Mrs. Barrington-Kennett, Sir Charles McLeod, Air Vice-Marshal A. V. Vyvyan, Air Commodore H. R. M. Brooke-Popham, Air Commodore C. A. H. Longcroft, and Mr. H. E. Perrin.

The amount of grants sanctioned by the Grants Sub-Committee between the date of last meeting on October 18 and the present meeting, amounting in all to £456 3*s.* 3*d.*, was approved by the Committee.

The War Memorial was very fully discussed, and the Committee were assured by the Architect that the Memorial would be completed and ready for unveiling on any date subsequent to March 31 next year.

The wooden model, it was decided, should be sent to the care of the A.O.C., R.A.F. Cadet College, Cranwell, Sleaford, Lincs. The model is to be despatched to Cranwell early in December, it being in the meantime loaned to the Women's Royal Air Force Old Comrades' Association Christmas Fair and Carnival, which is being held with a view to raising funds for that Association at St. Peter's Hall, Lower Belgrave Street, Victoria, S.W., on the afternoon of December 2 next.

It was reported to the Committee that the full total of 25 boys had been practically reached at Vanbrugh Castle School.

The Air Ministry Musical and Dramatic Society (which is under the patronage of the Air Council) have very kindly offered to hand over to the Fund practically the whole of their profits from two entertainments—one being a performance of "Iolanthe," on Jan. 11, 12 and 13, 1923, and the second a performance of "The Schoolmistress" on March 15 and 16, 1923.

IN PARLIAMENT

The R.A.F. in Iraq.

CAPTAIN BERKELEY, *on November 27, asked the Prime Minister* whether the Royal Air Force, or any part of it, or any force of aircraft under the control of British authorities, is or has been engaged in enforcing or attempting to enforce upon any part of the population of the mandated territory of Iraq the payment of taxes, either by bomb-dropping or otherwise ; if so, whether the British Government has concurred in the taking of such measures ; if not, whether, under the existing constitution of that territory, it would be possible for such measures to be taken without the knowledge of the British Government ; whether he is in a position to make a full statement upon the matter ; and, if not, whether he will order a full enquiry and lay the results upon the Table of this House ?

The Under-Secretary of State for the Colonies : There is no foundation for any suggestion that bomb-dropping or other offensive action by aircraft is resorted to in Iraq or any other area for the purpose of enforcing payment of taxes or in punishment for non-payment. The normal duties of aircraft in Iraq are those of patrol and communication. Offensive action is in no case undertaken except in reply to open and armed defiance of the administration or to attacks upon the native police forces of a kind which would otherwise necessitate expeditions by ground units. Such action, when undertaken, is under sole control of the British authorities, acting at the request of the Arab Government. In order to give every opportunity to the tribes concerned to submit to the Government, explicit warnings are habitually issued to them before any air action is taken, and these warnings even when they do not lead to immediate submission, enable the inhabitants to withdraw from the area selected. The result is that casualties have been few.

I am assured that the use of aircraft under these conditions has achieved results at least equal to those obtainable by ground expeditions and at a smaller toll of life and property. The reports received show that the number of cases in which the mere threat of air action is sufficient to bring about the desired result far exceeds the occasions where offensive air action is found to be actually necessary, and the High Commissioner reports that it is no exaggeration to say that air action amongst the Euphrates tribes has saved far more human lives than it has destroyed by restoring order and preventing inter-tribal fighting.

The Secretary of State is in communication with the High Commissioner on the whole subject, and as soon as full details have been received the matter will be exhaustively reviewed by His Majesty's Government.

Air Territorials

PLANS for the establishment of a Territorial Reserve to the Royal Air Force include the inauguration of instruction centres at Glasgow, Edgware, Bristol, Coventry, Weybridge, and Manchester. It is not proposed to construct new aerodromes or training workshops, but those already in existence, either as a part of the Royal Air Force itself or as Schools of Instruction in connection with an established firm, will be used. The instruction will be such as will make the Force as efficient as possible. In addition to members having compulsorily to attend for training at specified centres for certain definite periods annually, it is hoped to arrange for pilots and observers to fly during week-ends or other such times as they may be able to. This will enable them not to lose their flying touch. A large number of officers and men have already stated their desire to join this Force.

Wound Stripes and Silver War Badges

HIS MAJESTY THE KING having signified his approval, it is notified that the wearing on uniform of wound stripes and silver war badges is to be discontinued.

Note.—The wearing of chevrons in the R.A.F. was discontinued in July, 1920.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, November 14, 1922

General Duties Branch

Sqdn.-Ldr. E. W. Norton, D.S.C., is granted perm. commn., retaining present substantive rank and seny.; Aug. 1, 1919 (*Gazette* June 8, 1920, appointing him to a short service commn., is cancelled.

The follg. are granted perm. commns., with effect from the dates indicated, retaining present substantive ranks and seny., except where otherwise stated (*Gazettes* of those dates, appointing these officers to short service commns., are cancelled) :—

Flight-Lieutenants.—T. E. B. Howe, A.F.C., W. H. Mackenzie, A.F.C., R. L. Stevenson, M.B.E.; Oct. 24, 1919.

Flying Officers.—L. C. Wynne-Tyson; Sept. 12, 1919. D. V. Carnegie, A.F.C. (since promoted); Oct. 24, 1919.

The follg. are granted perm. commns., with effect from the dates indicated, retaining present substantive ranks and seny. (*Gazettes* of dates indicated in brackets, appointing these officers to short service commns., are cancelled):—

Flying Officers.—S. Graham, M.C., Oct. 24, 1919 (Oct. 24, 1919, and Aug. 26, 1921). S. E. Adams, Jan. 31, 1921 (March 1, 1921, and May 3, 1921), (since promoted).

The follg. are granted short service commns. in ranks stated, with effect from, and with seny. of, dates indicated :—

Flying Officers.—H. A. Anson; Nov. 3. R. F. Overbury; Nov. 2.

Pilot Officer on Probation.—F R. Lines; Nov. 1.

The follg. are granted temp. commns. as Flying Offrs., on seconding for four years' duty with R.A.F. : —Lieut. H. A. Crommelin, D. of Wellington's Regt.; Nov. 6. Sec. Lieut. H. P. F. Fagan, Somerset L.I.; Oct. 31. Flight-Lieut. J. L. L. Duffus relinquishes his short service commn. on account of ill-health contracted in the Service, and is permitted to retain rank of Capt.; Oct. 24 (*Gazette* Oct. 24, transferring this officer to Reserve, is cancelled). Flight-Lieut. E. A. E. Wood relinquishes his short service commn. on account of ill-health contracted in the Service, and is permitted to retain rank of Capt.; Nov. 15. Sqdn.-Ldr. (hon. Wing-Comdr.) S. J. Goble, D.S.O., O.B.E., D.S.C., resigns his permanent commn. on appt. to Royal Australian Air Force; March 31, 1921.

Stores Branch

Flying Offr. H. G. Jones is granted permanent commn. as Flight-Lieut. for accountant duties; June 17. His name will be placed on gradation list immediately follg. that of Flight-Lieut. A. W. P. Phillips, O.B.E. Flight-Lieut. E. N. E. Waldron is transferred to Stores Branch for accountant duties from General Duties Branch; May 22. His name will be placed on gradation list immediately follg. that of Flight-Lieut. J. L. Robertson.

Medical Branch

J. G. Russell, M.B., B.A., is granted short service commn. as Flying Offr., with effect from, and seny. of, Oct. 30. Flying Offr. J. Prendergast to be Flight-Lieut.; Nov. 14.

Nursing Service

The follg. ladies are confirmed in their appts. as Staff Nurses, with effect from dates indicated :—Miss G. Rees Jones; April 15. Miss A. B. O'Niell; June 1. Miss E. Spensley, Miss E. Rutledge; June 9. Miss A. M. Angus; June 15. Miss P. K. Pearce, Miss C. C. Kirkpatrick; July 3.

Memoranda

Maj. A. W. Northover, M.C., R.A.R.O., R.E., is granted temp. commn. as Sqdn.-Ldr. for duty under Directorate of Works and Buildings; Nov. 6. Flying Offr. H. G. Jones relinquishes actg. rank of Sqdn.-Ldr.; June 17.

London Gazette, November 17, 1922

General Duties Branch

Flt. Lieut. A. G. Taylor, A.F.C., to take rank and precedence below Flt. Lieut. W. A. Skeat; Oct. 26. Flyg. Offr. H. C. Peirce is transfd. to Reserve, Class C; Sept. 12 (correction). *Gazette*, Nov. 14, concerning Flyg. Offr. L. C. Wynne-Tyson is cancelled; Oct. 10, 1922, stands.

Memorandum

The permission granted to 2nd Lieut. D. K. Falkner to retain his rank is withdrawn on his joining T.A.

London Gazette, November 21, 1922

General Duties Branch

The following are granted permanent commns. as Pilot Offrs, with effect from Nov. 1, and with seny. of the dates indicated :—W. C. P. Bullock; Nov. 1, 1921. N. C. O. Forbes; Nov. 1, 1921. E. S. Burns; May 1, 1921. A. E. Scroggs; May 1, 1921.

The following are granted permanent commns., retaining present substantive rank and seny. (Aug. 31) :—Flt. Lieut. W. Helmore, Flyg. Offr. C. W. Busk, M.C. The following are granted permanent commns. as Flyg. Offrs., retaining present substantive ranks and seny. (since promoted). *Gazettes* of dates indicated in brackets, appointing these officers to short-service commns. are cancelled :—J. Duminy; Dec. 5, 1919 (Dec. 5, 1919). The Hon. J. H. B. Rodney, M.C.; Oct. 4, 1921 (Oct. 11, 1921).

The following are granted short-service commns. as Flyg. Offrs., with effect from, and with seny. of, dates indicated :—R. H. Horniman; Nov. 9. S. D. Scott; Nov. 8. H. M. Stringer; Nov. 8. F. A. Swoffer, M.B.E.; Nov. 14. E. J. H. Wright; Nov. 13.

Wing Commdr. F. E. T. Hewlett, D.S.O., O.B.E., is placed on half-pay, Scale A; Nov. 14. Flying Offr. L. W. Lowen is transfd. to Reserve, Class A, Nov. 15. Flyg. Offr. E. G. King is transfd. to Reserve, Class B; Nov. 22, Flyg. Offr. G. E. Randall, D.F.C., resigns his permanent commn.; Nov. 22;

Nursing Service

Miss Constance Abigal Marr resigns her appt. as Staff Nurse; Nov. 10.

London Gazette, November 24, 1922

General Duties Branch

Observer Offr. John Bertram Prouse is placed on retired list on account of ill-health contracted on active service; Nov. 25.

Memorandum

Hon. Sec. Lieut. Arthur Stuart Darlow relinquishes his hon. commission on joining the Army.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

Group-Captains: F. V. Holt, C.M.G., D.S.O., to R.A.F. Depot (Inland Area) (Supernumerary) pending disposal; on cessation of secondment for duty with the Chinese Government. 1.9.22. C. S. Burnett, C.B.E., D.S.O., from R.A.F. Base, Leuchars (Coastal Area), to R.A.F. Depot (Inland Area). 1.12.22.

Wing-Commanders: A. V. Bettington, C.M.G., from Headquarters, No. 12 Wing, Ireland, to R.A.F. Depot (Inland Area) (Supernumerary). 11.10.22. F. E. T. Hewlett, D.S.O., O.B.E., from R.A.F. Depot (Inland Area), to Half-pay List. 14.11.22. P. H. L. Playfair, M.C., from No. 1 Flying Training School (Inland Area) to command R.A.F. Base, Leuchars (Coastal Area). 15.11.22.

Squadron-Leaders: F. Sowrey, D.S.O., M.C., A.F.C., from No. 100 Squadron (Inland Area) to Basrah Group Headquarters (Iraq Command). 3.11.22. C. C. Miles, M.C., from Central Flying School (Inland Area) to Half-pay List. 10.11.22. F. C. Jobson, from R.A.F. Depot (Inland Area), to Headquarters, Inland Area (Inland Area). 3.11.22. A. S. Glynn, M.B., from Headquarters (Inland Area) to R.A.F. Depot (Inland Area) (Supernumerary). 3.11.22. (Acting Group Captain) H. C. Ellis, C.B.E., from R.A.F. Depot (Inland Area) to Command Accounts Office (Palestine Command) on ceasing to be attached to Air Ministry. 11.8.22. Substituted for the previous notification which appeared in Intelligence Bulletin No. 76, dated 29.8.22, wherein this Officer was posted from R.A.F. Depot to Palestine Wing Headquarters, with effect from 11.8.22. W. Sowrey, D.F.C., A.F.C., from R.A.F. Depot (Inland Area) to No. 1 Flying Training School (Inland Area). 30.10.22. Substituted for the previous notification which appeared in Intelligence Bulletin No 84, dated 1.11.22. The notification concerning this Officer which appeared in Intelligence Bulletin No. 85, dated 7.11.22, is hereby cancelled. I. T. Lloyd from No. 2 Flying Training School (Inland Area) to command No. 56 Squadron (Inland Area). 15.11.22. H. I. Hanmer, D.F.C., from R.A.F. Depot (Inland Area) to No. 2 Flying Training School (Inland Area). 10.11.22.

Flight-Lieutenants: L. E. Taylor, M.B.E., from Seaplane Training School (Coastal Area) to Electrical and Wireless School (Inland Area). 1.11.22. A. Jukes, M.B.E., from Irish Stores and Repair Unit (No. 12 Wing, Ireland) to R.A.F. Depot (Inland Area) (Supernumerary). 12.8.22. W. F. Wilson, M.C., M.B. from No. 60 Squadron (India) to No. 28 Squadron (India). 9.10.22. A. Briscoe, M.B., from No. 28 Squadron (India) to Headquarters, Iraq Command (Supernumerary). 15.10.22. R. Hutton, to Basrah Group Headquarters (Iraq Command), on appointment to short service Commn.; for duty as Officer in charge Inland Water Transport. 1.10.22. H. G. Jones, from No. 4 Stores Depot to School of Photography (Inland Area) (Supernumerary). 24.9.22. T. L. P. Harries, M.B., from R.A.F. Depot (Inland Area) to R.A.F. Hospital, Cranwell. 8.11.22. A. W. C. V. Parr, from No. 1 Flying Training School (Inland Area) to Central Flying School (Inland Area). 8.11.22. E. N. H. Gray, D.P.H., from No. 27 Squadron (India) to No. 31 Squadron (India). 11.10.22. H. W. G. Jones, from No. 28 Squadron (India) to R.A.F. Depot (Inland Area) (Supernumerary). 19.10.22. J. A. G. Haslam, M.C., D.F.C., from No. 7 Group Headquarters (Inland Area) to School of Army Co-operation (Inland Area). 16.11.22. R. S. Topham, M.B., D.P.H., from No. 31 Squadron (India) to R.A.F. Depot (Inland Area). (Supernumerary.) 17.10.22. (Acting Squadron Leader) W. B Johnstone. The name of this Officer is as now stated, not "Johnston," as described in R.A.F. Intelligence No. 86, dated 9.11.22.

Captain (*Temporary Major*) S. C. R. Crawford, O.B.E. (5th Battalion East Surrey Regt.) (T.A.), Headquarters, Iraq Command. For duty as Deputy Judge Advocate-General (Class BB). On attachment to R.A.F.

PERSONALS

Married

CHARLES MENTEN BENJAMIN, late R.A.F., younger son of Mr. and Mrs. H. N. Benjamin, of 14, Cadogan Square, S.W. 1, was married on November 16, to MARAGRET (PEGGY) youngest daughter of Mrs. and Dr. WM. CRESER, of the Trinity College of Music.

To be Married

A marriage has been arranged, and will shortly take place, between Lieut.-Col. CUTHBERT EUAN CHARLES RABAGLIATI, M.C., A.F.C., Chevalier de la Légion d'Honneur, late K.O.Y.L.I. and R.F.C., and CLARISSA CATHERINE DE HOCHEPIED-LARPENT, only daughter of the late JOHN MELVILL, ninth Baron de Hochepied, and the Baroness de Hochepied.

The engagement is announced between Captain P. E. M. LE GALLAIS, A.F.C., the Royal Sussex Regt., eldest son of the late Colonel Mark Le Gallais and Mrs. Le Gallais, of Broadlands, Jersey, and MARGARET CECILIA, only daughter of Mr. and Mrs. HENRY J. BEEBE, of Springfield, Massachusetts, U.S.A.

CORRESPONDENCE

[The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.]

FLYING IN SWEDEN

[2066] In connection with the reference in this week's issue to the forthcoming I.L.U.G. I should like to say that having been a flyer for 2½ years in Sweden, knowing the country thoroughly and speaking the language, and knowing the air route *via* Rotterdam and Kopenhagen, I shall be very glad to give advice or assistance and introduction to prominent people in Göteborg to anyone who is interested in the scheme, some of the conditions to be met with being certainly peculiar.

C. H. R. JOHNSTON, Major

PUBLICATIONS RECEIVED

Direction and Position Finding by Wireless. By R. Keen, B.Eng., A.M.I.E.E. London: The Wireless Press, Ltd. Price 9*s*.

Stamps of the Flying Post. By W. E. Hughes. Alan Turton, 32, Great St. Helens, London, E.C. 3. Price 1*s*. net (by post, 1*s*. 2*d*.).

Shall the State Throw Away the Keys? An Exposition of what Fine Chemicals mean to the Nation. The Association of British Chemical Manufacturers, 166, Piccadilly, London, W. 1.

First-Aid X-Ray Atlas of Fractures and Dislocations. By H. C. Orrin. London: Balliere, Tindall and Cox, 8, Henrietta Street, Covent Garden, W.C. 2.

The Motor Manual. London: The Temple Press, Ltd. Price 2*s*. 6*d*. net.

How to Form a Company. By Herbert W. Jordan. London: Jordan and Sons, Ltd., Chancery Lane, W.C. 2. Price 1*s*. 6*d*. net, by post 1*s*. 9*d*.

Toy and Model Designs. Evans Brothers, Ltd., Montague House, Russell Square, W.C 1. Price 2*s*. 6*d*. net.

Medical Notes in Connection with Commercial Aircraft. C.A. Publication 3. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 9*d*. net.

Etude sur le Ballon Captif et les Aeronefs Marins. By Commandant Charles Lafon. Paris: Gauthier-Villars et Cie., Quai des Grands-Augustins, 55. Price 20 fr.

Report on Commercial Conditions in the Dominion of New Zealand, to July, 1922. By R. W. Dalton. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s*. 9*d*. net; by post 1*s*. 10½*d*.

Aeronautical Research Committee, Reports and Memoranda:

No. 774 (*Ae*. 34). *Biplane Investigation with R.A.F.* 15 *Section.* By W. L. Cowley, A.R.C.Sc., and C. N. H. Lock, M.A. September, 1921. London: H.M. Stationery Office, Kingsway, W.C. Price 1*s*. net.

No. 787 (*Ae*. 44). Lateral Control of Bristol Fighter at Low Speeds. By F. B. Bradfield. January, 1921. London: H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s*. 6*d*. net. By post 1*s*. 7*d*.

Technical Notes; No. 107. *Structural Safety during Curved Flight.* By Dr. A. Rohrbach. *No.* 108. *The Use of Multiplied Pressures for Automatic Altitude Adjustments.* By Stanwood W. Sparrow. *No.* 109. *The Twisted Wing with Elliptic Plan Form.* By Max M. Munk. *No.* 110. *The Effect on Rudder Control of Slip-Stream Body, and Ground Interference.* By H. I. Hoot and D. L. Bacon. *No.* 111. *Stresses produced on an Airship Flying Through Gusty Air.* By Max M. Munk. *No.* 113. *Report on the General Design of Commercial Aircraft.* By E. P. Warner. *No.* 114. *Supplementary Report of Oil-Scraper Piston Rings.* By H. S. McDewell. National Advisory Committee for Aeronautics, Washington, D.C.

Reports; No. 128. *Aeronautic Instruments: Section IV, Direction Instruments. No.* 141. *Experimental Research on Air Propellers—V.* By W. F. Durand and E. P. Lesley. *No.* 146. *The Six-Component Wind Balance.* By A. F. Zahm. *No.* 148. *The Pressure Distribution over the Horizontal Tail Surface of an Airplane—III.* By F. H. Norton and W. G. Brown. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Catalogue.

S.K.F. Ball and Roller Bearings. The Skefko Ball Bearing Co., Ltd., Luton, Beds.

SOCIETY OF MODEL AERONAUTICAL ENGINEERS

(London Aero-Models Association)

DR. HANKIN'S lecture on "The Evolution of Animal Flight" was given before a large number of members and visitors. Mr. F. de P. Green, who occupied the Chair, proposed a hearty vote of thanks, which was enthusiastically passed.

On Friday next Messrs. Rippon and Burchell will continue the debate on "Large Models *v*: Small Models."

On Friday, December 8, a smoking concert will be given.

On Friday, December 15, a lecture will be given by Mr. W. E. Evans, whose subject will be "Some Points on Wood." All interested in the subject are invited to attend.

The Secretary of the Paddington Aero Club (affiliated to S.M.A.E.) reports as follows:—Gliding at Sudbury, Saturday. Present: Messrs. Dixon, Evans, Green and Levy. All had gliders out. Mr. Green obtained several good glides of about 20 secs., the best being 23 secs. Mr. Levy's attempt on record was unsuccessful, but he put up many excellent glides of more than 35 secs., his best attempts being 38, 38⅘ and 39 secs. These glides were timed by Messrs. Evans and Green.

Mr. F. de P. Green reports from Wimbledon on Sunday last as follows:—"Several members assembled on Wimbledon Common this morning, but the official observers, Messrs. Houlberg and Hersom, had an easy but somewhat cold time of it in watching several attempts made to tackle the stiff wind which was blowing at the time. Mr. D. A. Pavely made plucky attempts with his big C.A. monoplane, which, after a fairly good flight, alighted rather badly with slight injury. Mr. H. C. Hersom made several flights, but damaged both his machines. Mr. F. de P. Green got off with his originally designed "Farman Tandem Multiplane" (twin screw), which made two short but rather uneasy flights, landing, however, in each case quite safely. Several attempts with gliders were made by Messrs. Rippon, Levy and Johnson, but the weather conditions prevailing rendered any serious attempt quite impracticable.

Meetings are held at Headquarters, "The Red Lion Hotel," 20, Great Windmill Street, Piccadilly, W. 1, every Friday at 7.30 p.m.

A. E. JONES.
Hon. Sec.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: **cyl. = cylinder; I.C. = internal combustion; m. = motor**

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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Published November 23, 1922

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29,464. A. H. R. FEDDEN, L. F. G. BUTLER and BRISTOL AEROPLANE CO. LTD. Gas-starter distributors for I.C. engines. (187,854.)
31,041. BLACKBURN AEROPLANE AND MOTOR CO., LTD., and A. DOWSON. Mortising and boring machines. (187,864.)
32,259. ANC. ETAB. BARBIER, BERNARD ET TURENNE. Beacon-light devices. (173,489.)
33,043. W. G. NORDEN. Appliances for playing an aircraft board-game. (187,881.)

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